

PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Fiona CAMPBELL *et al.* Examiner: Soroush, Ali
Serial No.: 10/567,659 Art Unit: 1616
Filed: 09/07/2006 Docket: 007193-19 US
For: METHOD FOR INHIBITING BACTERIAL COLONISATION

Assistant Commissioner for Patents
United States Patent and Trademark Office
Washington, D.C., 20231

DECLARATION PURSUANT TO 37 CFR §1.131

I, Dr Cuong TRAN of Children, Youth and Women's Health Service Incorporated, Adelaide, South Australia, hereby declare as follows:-

1. I am a Research Scientist with expertise in physiology and gastroenterology with over 10 years of experience. I attach my *Curriculum Vitae* as Exhibit I to evidence my standing in this field.

2. I am an inventor of subject matter described and claimed in USSN 10/567,659 (the "Application"). Claim 1 defines a method for inhibiting bacterial colonization of mucous epithelium by administering a combination of N-acetyl cysteine (a mucolytic agent) and an antibacterial component from hyperimmune colostrum or hyperimmune milk. The antibacterial component is not necessarily an antibody or other immunoglobulin specific for the particular bacterium, such as *Helicobacter*. The antibacterial component could include, for example, lactoferrin (see line 29 of the Application).

3. Example 2 in the Application is instructive to the invention as it describes the treatment protocol of providing to female C57 BL/6 mice various combinations of N-acetyl cysteine, non-immune bovine colostrum or water and hyperimmune bovine lactoferrin prepared by proteolytic digestion (BLc-A) or by thermal inactivation (BLc-B). Table 1 on page 71 of the Application provides the treatment combinations. Example 3 then assesses the bacterial colonization and pathology and the results are presented in Example 4 onwards and in the Figures. In essence, as shown in Example 5, the addition of N-acetyl cysteine to the treatment with bovine lactoferrin significantly decreased the level of colonization compared to the use of lactoferrin alone. From Example 6, N-acetyl cysteine alone had no effect on colonization. However, N-acetyl cysteine significantly reduced bacterial colonization in the presence of hyperimmune colostrum but less so within non-hyperimmune colostrum.

4. These results were somewhat surprising to me. I would have expected that hyperimmune colostrum may have some inhibitory effect on bacterial colonization. However, in the presence of N-acetyl cysteine, this effect is significantly enhanced. I would have neither anticipated nor considered that N-acetyl cysteine would have caused such an improvement in the anti-bacterial activity of hyperimmune colostrum.

5. N-acetyl cysteine is an example of a mucolytic agent. Such agents tend to dissolve thick mucus by hydrolyzing glycosaminoglycans. Hence, it is almost counter intuitive to expect a synergy to occur between a mucolytic agent and a compound like lactoferrin.

6. Legal Counsel has shown me the Official Action dated 14 October, 2009. In the Official Action the Examiner concludes that the subject matter claimed is allegedly obvious in light of the prior art. I note that one prior art document is Casswall *et al*, *Scandinavian Journal of Gastroenterology*, 2002(12). This document merely shows that bovine hyperimmune colostrum has antibodies to *Helicobacter pylori* and that these

antibodies reduced bacterial colonization in mice. The document Dial *et al*, *Digestive Diseases and Sciences* 43(12):2750-2755, 1998 disclosed that bovine lactoferrin does have bacteriostatic activity towards *Helicobacter pylori*. US Patent Publication No. 2003/0180381 suggested that cobalt salts were inhibitory to *Helicobacter pylori* and could be used in conjunction with an antibiotic or a proton pump inhibitor. Upon reading these documents, a person skilled in the art would not have been motivated to conceive that a mucolytic agent like N-acetyl cysteine would actually enhance the anti-bacterial nature of hyperimmune colostrum or hyperimmune milk.

7. In my considered opinion, given my knowledge of the art in this field, the invention as claimed is not obvious.

8. I further declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: 07/01/2010


Dr Cuong TRAN

EXHIBIT I

Curriculum Vitae

Dr Cuong TRAN

CURRICULUM VITAE

Name CUONG DUY TRAN

Address Home: 48 Ballville St., Prospect SA 5082, Australia
Work: Gastroenterology Unit,
Children, Youth and Women's Health Service
72 King William Rd, North Adelaide SA 5006, Australia

Telephone Mobile: 0430 444 263
Work: +61 8 8161 6991

Faxsimile Work: +61 8 8161 6088

Email cuong.tran@health.sa.gov.au

Date/Place of Birth March 18, 1973, Vietnam

Nationality Australian citizen: 24th January, 1985

Current Position MS McLeod Post-Doctoral Fellow
Gastroenterology Unit,
Children, Youth and Women's Health Service
72 King William Rd,
North Adelaide, 5006, SA, Australia

Qualifications

2001 PhD - The University of Adelaide (2001)
Thesis title: Intestinal zinc and metallothionein: role in chemotherapy-induced mucositis.

1995 B.Sc (Hons) - The University of Adelaide (1995)
Thesis title: The effects on apoptosis of butyrate and sulindac sulphide in HL60 and LIM 1215 cell lines.

1994 B.Sc. - The University of Adelaide (1994)
Majors: Physiology & Pharmacology

Appointments

2010-present Affiliate Lecturer B
School of Molecular and Biomedical Sciences
The University of Adelaide
SA 5005 Australia

2009-present MS McLeod Post-Doctoral Fellow
Gastroenterology Unit,
Children, Youth and Women's Health Service
72 King William Rd,
North Adelaide, 5006, SA, Australia

2006-2009 Affiliate Lecturer A
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School of Molecular and Biomedical Sciences
 The University of Adelaide
 SA 5005 Australia

2008-2009 **Senior Research Scientist**
 Gastroenterology Unit,
 Children, Youth and Women's Health Service
 72 King William Rd,
 North Adelaide, 5006, SA, Australia

2004-2007 **NH&MRC Industry Fellow**
 Gastroenterology Unit,
 Children, Youth and Women's Health Service
 72 King William Rd, North Adelaide, SA, 5006, Australia

2003-2004 **Post Doctoral Fellow**
 Section of Nutrition, Department of Pediatrics
 University of Colorado Health Sciences Center
 4200 East Ninth Ave, C225, Denver, Colorado, 80262, USA

2000-2002 **Medical Scientist**
 Gastroenterology Unit,
 Women's and Children's Hospital,
 72 King William Rd, North Adelaide, SA, 5006, Australia

2000 **Demonstrator**
 Department of Physiology,
 The University of Adelaide, SA, Australia

1998-2000 **Scientific Officer**
 Numico Research Australia Pty Ltd
 180 Fosters Rd, Oakden, SA, 5086, Australia

Administrative Roles

2005-present

Executive Member, Youth and Women's Health Service Animal Ethics Committee

2004-present

Scientific Member of the Children, Youth and Women's Health Service Animal Ethics Committee

2004-present

Chair of the Gastroenterology Unit Core Laboratory Meetings at the Children, Youth and Women's Health Service

Past and Present Collaborations

International

The University of Colorado Health Sciences Center	KM Hambidge, NF Krebs	2003
The Children's Hospital, Denver	E Hoffenberg	2003-

National

CSIRO	M Fenech, E Symonds	2008-
Bone Growth Foundation	C Xian	2006-
The University of Adelaide	GS Howarth	2006-
The Institute of Veterinary and Medical Sciences	P Coyle, A Rofe, J Philcox	1997-
Cooperative Research Centre for Tissue Growth & Repair	GS Howarth	1997-2001

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The Child Health Research Institute Pharmaceutical Companies Numico Research Australia Pty Ltd	GS Howarth MAF Campbell	1997-2001 1998-2006
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Postgraduate Teaching Development and Supervision

- 2007** Completed full module of **Effective Supervision Program 2007**, University of Adelaide, this will allow me to be a principal supervisor of PhD students
- 2006-present**
Thesis Assessor for the Honours Program in Agriculture and Animal Science, School of Agriculture, Food & Wine, Faculty of Science, University of Adelaide
- 2005-present**
Thesis Assessor for the Honours Program in Department of Paediatrics, University of Adelaide
Direct supervision of Honours Students from the Department of Physiology, University of Adelaide
- 2001-present**
Indirect supervision of postgraduate students within the Gastroenterology Unit at the Children, Youth and Women's Health Service
- 2000**
Obtained a Physiology Teaching Associate Program certificate in 2000, while teaching 3rd year Physiology and 2nd year Dentistry students at the University of Adelaide

Lecturing**2007-present:**

- Guest Lecturer:** Human Physiology IIB – Gastrointestinal Physiology, Discipline of Physiology, University of Adelaide.
- Instructor:** Human Physiology IIB – Tutorial, Discipline of Physiology, University of Adelaide.

Undergraduate Students Supervision

- 2008** Biomedical Science Students (4 students) – 3rd Yr Bachelor of Biomedical Science student, The University of Adelaide
- 2006** Amanda McLean – 2nd Yr Bachelor of Animal Science student, The University of Adelaide
- 2005** Swagatha Sundar – 3rd Yr Medical and Pharmaceutical Biotechnology student, The University of South Australia.

Honours Students Supervision

- 2010** Nurul Musa – The Discipline of Physiology, The School of Molecular and Biomedical Sciences, The University of Adelaide.
Thesis title: (Yet to complete)
- 2009** Domenic Renna – The Discipline of Agriculture and Animal Science, School of Agriculture, Food and Wine, The University of Adelaide
Thesis title: (Class 2A) Fermentation Profiles in Irritable Bowel Syndrome and Lactose Malabsorption – use of breath testing.
- 2007** Kim Peng Tan – The Discipline of Paediatrics, Faculty of Health Sciences, The University of Adelaide
Thesis title: (1st Class) Zinc deficiency causes bone growth retardation in metallothionein-I and -II knockout mice.

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- 2006** **Swagatha Sundar** – The Discipline of Agriculture and Animal Science, School of Agriculture, Food and Wine, The University of Adelaide
Thesis title: (1st Class) Dietary zinc supplementation and methotrexate-induced small intestinal mucositis in metallothionein-knockout and metallothionein-wildtype mice.
- 2005** **Joanne Ball** – The Discipline of Physiology, The School of Molecular and Biomedical Sciences, The University of Adelaide.
Thesis title: (Class 2A) The potential protective role of zinc salts in experimentally-induced ulcerative colitis.

Masters Students Supervision

- 2004** **Rikke Gøbel** – Department of Human Nutrition, The Royal Veterinary and Agricultural University, Copenhagen, Denmark.
Thesis title: (Pass) Association of *Helicobacter pylori* and gastritis on pregnancy outcome and relationship with iron status.

PhD Students Supervision

- 2008** **Laura Fong** – The Discipline of Physiology, The School of Molecular and Biomedical Sciences, The University of Adelaide.
Thesis title: (Yet to complete)
- 2002** Have been involved in co-supervising numerous PhD students in the Gastroenterology Unit at the Children, Youth and Women's Health Service.

Management Development

- 2007** Myer Brigg Type Indicator Workshop for Managers
Myers Briggs Type Indicator and Leadership/Team Work

Research Assistant

- 2007-8** **Nick Hatzirodros (BSc)** – Involved in setting up all molecular biology procedures in my research program
- 2007-** **Rosa Katsikeros (BSc)** – Involved in clinical projects with emphasis on patient recruitment and enrolment and general laboratory work

Research Expertise and International Reputation

Zinc nutrition and metabolism in both animals and humans, in particular zinc absorption capacity in human populations at risk of zinc deficiency.

Helicobacter infection in animal models looking at novel therapies of eradication using bioactives in milk and plants as well as zinc.

Invited Speaker

- 2007** **Hepatology and Luminal Research Workshop** – Clinical Updates on Autoimmune Diseases of the Liver (Hunter Valley, NSW). *Evidence-based approaches to assessing gut function.*
- 2006** **HarvestPlus Challenge Program and Gates Foundation One Day Symposium** – Adelaide University, Waite Campus (Adelaide, Australia). *Uses of zinc stable isotope to estimate zinc absorption.*
American Australian Association (Sydney, Australia). *Zinc and Diarrhoeal Disease.*

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- 2005 Children, Youth and Women's Health Service – Grand Round “Our potential to improve Indigenous health in South Australia” (Adelaide, Australia). *Zinc & Good Health, How Do We Assess It?*
- 2004 South Australian Gut Club (Adelaide, Australia). *Zinc and gut health.*
- 2003 Centre for Human Nutrition Seminar Series – University of Colorado Health Sciences Centre (Denver, USA). *Novel therapies for gastric ulcers: what we've learned in the mouse model.*
- American Australian Association (New York, USA). *Zinc and Aboriginal Health.*
- 2002 The 11th Symposium on Trace Elements in Man and Animals – Recent Scientific Advances and Implication (Berkley, USA). *Novel analytical methods for measuring trace elements.*
- 2000 The Queen Elizabeth Hospital Symposium Meeting 2000 – New directions in asthma and zinc research (Adelaide, Australia). *Application of Zinquin in a rat model of intestinal damage and repair.*
- 1997 South Australian Gut Club (Adelaide, Australia). *Zinc: has it a protective role?*

Research Society Members

Current

Nutrition Society of Australia Inc.	2007-
American Society for Nutrition	2002-
The Gastroenterological Society of Australia	1998-

Previous

American Society for Nutritional Sciences	2002-2003
The Australian Society of Medical Research	1996-2000
Australian Physiological and Pharmacological Society	1996-1999

Journal editorial board member

Current

International Journal of Cancer Research
Journal of Applied Sciences
Journal of Biological Sciences
Journal of Medical Sciences
Asian Journal of Clinical Nutrition
World Journal of Gastroenterology (2010-2013)

Invited reviewer of other journals

Drug Target Insights
The Journal of Complementary Medicine
Digestion
Saudi Medical Journal

Reviewer of grant applications for funding bodies

Channel 7 Children's Research Foundation SA Inc.

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Peer-Reviewed Publications (JIF, Rank in Field)

1. Ritchie BK, Brewster DR, Davidson GP, **Tran CD**, McNeil Y, Hawkes JS, Butler RN. The ¹³C-Sucrose Breath Test: a novel non-invasive biomarker of environmental gut health. *Pediatr.* 2009;124(2):620-626. [5.012, 1/74]
2. **Tran CD**, Sundar S, Howarth GS. Dietary zinc supplementation and methotrexate-induced small intestinal mucositis in metallothionein-knockout and wild-type mice. *Cancer Biol Ther.* 2009; 8(17). [Epub ahead of print] [2.981, 52/123]
3. Huynh HQ, Campbell MA, Couper RT, **Tran CD**, Lawrence A, Butler RN. Lactoferrin and desferrioxamine are ineffective in the treatment of *Helicobacter pylori* infection and may enhance *H. pylori* growth and gastric inflammation in mice. *Lett Appl Microbiol.* 2009;48(5):517-22. [1.623, 61/93]
4. Fong L, Tan K, **Tran CD**, Cool J, Scherer M, Foster BK, Xian CJ. Zinc deficiency causes bone growth retardation in metallothionein-I & II knockout mice. *Bone.* 2009;44(6):1151-62. [3.966, 23/87]
5. Derrick Roberts ALK, Howarth GS, Liaw WC, Moretta S, Kritas S, Lynn KA, Yazbeck R, **Tran C**, Fletcher JM, Byers S. Gastrointestinal Pathology in a Mouse Model of Mucopolysaccharidosis Type IIIA. *Cell Physiol.* 2009;219(2):259-64. [3.638, 21/78]
6. Ritchie B, Brewster D, **Tran CD**, McNeil Y, Zacharakis B, Davidson GP, Butler RN. The monoclonal stool antigen test for detection of *Helicobacter pylori* infection in young Australian Aboriginal children: diagnostic accuracy. *Pediatr Infect Dis J.* 2009;28(4):287-9. [3.215, 5/74]
7. Symonds EL, **Tran CD**, Butler RN, Omari T. Gastric emptying is altered with the presence of gastritis. *Dig Dis Sci* 2008;53(3):636-641. [1.388, 35/46]
8. Gøbel R, Symonds EL, Butler RN, **Tran CD**. Association between *Helicobacter pylori* infection in mothers and birth weight. *Dig Dis Sci* 2007;52(11):3049-3053. [1.388, 35/46]
9. **Tran CD**, Ball JM, Sundar S, Coyle P, Howarth GS. The role of zinc and metallothionein in the dextran sulfate sodium-induced colitis mouse model. *Dig Dis Sci* 2007;52(9):2113-21. [1.388, 35/46]
10. **Tran CD**, Gøbel R, Symonds EL. Metallothionein expression in *Helicobacter* infected pregnant mice, their foetuses and pups. *Dig Dis Sci* 2007;52(6):1527-32. [1.388, 35/46]
11. Gøbel R, Symonds EL, Kritas S, Butler RN, **Tran CD**. *Helicobacter felis* infection causes an acute iron deficiency in non-pregnant and pregnant mice. *Helicobacter* 2006;11(6):529-32. [2.584, 13/46]
12. **Tran CD**, Butler RN, Miller MJS. The role of Amazonian herbal medicine Sangre de Grado in *Helicobacter pylori* infection and its association with metallothionein expression. *Helicobacter* 2006;11(2):134-5. [2.584, 13/46]
13. Hambidge KM, Miller LV, **Tran CD**, Krebs NF. Measurements of zinc absorption: application and interpretation in research designed to improve human zinc nutriture. *Inter J Vit Nut Res* 2005; 75(6):385-93. [1.0341, 34/53]
14. **Tran CD**, Campbell MAF, Kolev Y, Chamberlain S, Huynh HQ, Butler RN. Short-term zinc supplementation attenuates *Helicobacter felis*-induced gastritis in the mouse. *J Infect* 2005; 50(5):417-24. [1.882, 31/41]
15. Huynh HQ, Couper RT, **Tran CD**, Moore L, Kelso R, Butler RN. N-acetyl-cysteine, a novel treatment for *Helicobacter pylori* infection. *Dig Dis Sci.* 2004;49(11-12):1853-61. [1.427, 30/46]
16. **Tran CD**, Miller LV, Krebs NF, Lei S, Hambidge KM. Zinc absorption as a function of the dose of zinc sulfate in aqueous solution. *Am J Clin Nutr.* 2004;80(6):1570-1573. [5.433, 3/53]
17. Teo M, Chung S, Chitti L, **Tran C**, Kritas S, Butler R, Cummins A. Small bowel bacterial overgrowth is a common cause of chronic diarrhea. *J Gastroenterol Hepatol.* 2004; 19(8):904-909. [1.796, 23/46].

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18. **Tran CD**, Huynh H, van den Berg M, van der Pas M, Campbell MA, Philcox JC, Coyle P, Rofe AM, Butler RN. Helicobacter-induced gastritis in mice not expressing metallothionein-I and II. *Helicobacter*. 2003;8(5):533-41. [2.313, 17/46]
19. Keen CL, Jue T, **Tran CD**, Vogel J, Downing RG, Iyengar V, Rucker RB. Analytical methods: improvements, advancements and new horizons. *J Nutr*. 2003;133(5 Suppl 1):1574S-8S. [3.245, 7/53]
20. **Tran CD**, Howarth GS, Coyle P, Philcox JC, Rofe AM, Butler RN. Dietary supplementation with zinc and a growth factor extract derived from bovine cheese whey improves methotrexate-damaged rat intestine. *Am J Clin Nutr*. 2003;77(5):1296-303. [5.433, 3/53]
21. **Tran CD**, Butler RN, Howarth GS, Philcox JC, Rofe AM, Coyle P. Regional distribution and localization of zinc and metallothionein in the intestine of rats fed diets differing in zinc content. *Scand J Gastroenterol*. 1999;34(7):689-95. [1.790, 24/46]
22. **Tran CD**, Butler RN, Philcox JC, Rofe AM, Howarth GS, Coyle P. Regional distribution of metallothionein and zinc in the mouse gut: comparison with metallothionein-null mice. *Biol Trace Elem Res*. 1998;63(3):239-51. [0.868, 222/261]

In press

23. Ritchie BK, Brewster DR, Tran CD, Davidson GP, McNeil Y, Butler RN. Probiotic therapy in Aboriginal children with acute diarrhoea disease: double blind randomised clinical trial of efficacy. *J Pediatr Gastroenterol Nutr*. 2009 (accepted 22nd July 2009). [2.077, 10/70]
24. Tran CD, Kritas S, Campbell MAF, Huynh HQ, Lee SS, Butler RN. Novel combination therapy for the eradication of *Helicobacter pylori* and alterations in gastric emptying. *Helicobacter* (submitted)
25. Tran CD, Cool J, Xian CJ. Effect of dietary zinc on the expression of small intestinal brush border enzymes in metallothionein-null and wild-type mice. *Pediatr Res* (submitted)
26. Tran CD, Sundar S, Howarth GS, Butler RN. Use of the ¹³C-sucrose breath test to assess small bowel integrity following zinc supplementation in metallothionein-knockout and wild-type mice with methotrexate-induced mucositis. *Inter J Biol Sci* (submitted)

Book Publications

1. 2004 Annual Bibliography of Significant Advances in Dietary Supplements Research. Office of Dietary Supplements, National Institutes of Health, p9.

Book Chapter

1. **Tran CD**. Advances of Zinc in Health Research. In: *Micronutrient and Health Research*. Editor: Takumi Yoshida, pp. 23-70. 2008 Nova Science Publishers, Inc.

Published Abstracts**2009**

1. **Tran CD**, Cool J, Xian CJ. Effect of dietary zinc on small intestinal morphology and brush border enzymes in metallothionein-null and wild-type mice. *J Gastroenterol Hepatol* 2009.
2. **Tran CD**, Sundar S, Howarth GS, Butler RN. Use of the ¹³C-sucrose breath test to assess small bowel integrity in methotrexate-induced mucositis following zinc supplementation in metallothionein-knockout and wild-type mice. *J Gastroenterol Hepatol* 2009.

2008

3. **Tran CD**, Katsikeros R, Krebs NF, Manton N, RN Butler, GP Davidson. Fractional absorption of zinc and small bowel integrity in children with Coeliac Disease. *J Gastroenterol Hepatol* 2008.

2007

4. RN Butler, B Ritchie, D Brewster, Y McNeil, **CD Tran**, GP Davidson. Non invasive assessment of small intestinal health in Aboriginal children with and without diarrhoeal disease – small intestine villous function breath test. *FASEB J*. 2007; 21:671.19.

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5. **CD Tran, J Ball, S Sundar, GS Howarth.** The role of zinc (Zn) and metallothionein (MT) in dextran sulfate sodium (DSS)-induced colitis in MT-null (MT-/-) and wild-type mice. *The FASEB J.* 2007; 21: 861.4.
- 2006**
6. **S Kritis, C Tran, F Campbell, SS Lee, GP Davidson, RN Butler.** Gastric emptying rates of new *Helicobacter pylori* therapies. *Helicobacter* 2006;11(Suppl 2): i-i.
7. **CD Tran, J Ball, S Sundar, GS Howarth.** Time course of dextran sulfate sodium (DSS)-induced colitis in metallothionein (MT)-null (MT-/-) mice. *J Gastroenterol Hepatol* 2006; 21 (S4): A283.
8. **CD Tran, J Ball, S Sundar, GS Howarth.** Zinc supplementation and metallothionein (MT) in dextran sulfate sodium (DSS)-induced ulcerative colitis. *J Gastroenterol Hepatol* 2006; 21 (S4): A347.
9. **CD Tran, R Goebel, EL Symonds.** Metallothionein expression and pregnancy outcomes in *Helicobacter pylori* infected pregnant mice, their foetuses and pups. *FASEB J.* 2006 20:A1093.
- 2005**
10. **CD Tran, R Goebel, E Symonds.** Metallothionein expression and pregnancy outcomes in *helicobacter pylori* infected pregnant mice, their foetuses and pups. *J Gastroenterol Hepatol* 2005;20 (S1): A112.
- 2004**
11. **CD Tran, KM Hambidge, LV Miller, S Lei, JE Westcott, NF Krebs.** Zinc (Zn) absorption as a function of dose of Zn sulfate in aqueous solution. 2004 Experimental Biology meeting abstracts. *The FASEB Journal*, 2004; 18 (4&5), Abstract # 98.2
- 2003**
12. **MAF Campbell, Y Kolev, LM Stevenson, CD Tran, GP, Davidson, RN Butler.** A novel formulation to treat *Helicobacter pylori* infection. *J Gastroenterol Hepatol* 2003;18 (S2): B108.
- 2002**
13. **M Teo, L Chitti, C Tran, R Butler, AG Cummins.** Small bowel bacterial overgrowth is common in idiopathic chronic diarrhoea. *J Gastroenterol Hepatol* 2002;17 (S5): A105.
14. **E Symonds, T Omari, C Tran, R Butler.** *H. pylori* infection reduces sucrase activity in mice. *J Gastroenterol Hepatol* 2002;17 (S5): A113.
15. **R Butler, N Pelton, B Zacharakis, C Tran, D Tivey, GP Davidson.** ^{13}C sucrose breath test – A novel non-invasive test for sucrase activity. *J Gastroenterol Hepatol* 2002;17 (S5): A114.
16. **RN Butler, B Ritchie, C Tran, B Zacharakis, D Brewster, G Davidson.** CH₄ differences between Aboriginal and Caucasian infants. *J Gastroenterol Hepatol* 2002;17 (S5): A176.
17. **MAF Campbell, Y Kolev, LM Stevenson, CD Tran, RN Butler, GP Davidson.** Simulated gastric conditions that supports *in vitro* growth and survival of *H. pylori*. *J Gastroenterol Hepatol* 2002;17 (S5): A187.
18. **R Butler, N Pelton, B Zacharakis, CD Tran, D Tivey, G Davidson.** The Sucrose breath test (SBT): A novel test for assessment of small bowel mucosal function (SBMF) and damage. *Gastroenterol* 2002; 122 (4 suppl. 1): A72.
19. **CD Tran, H Huynh, F Campbell, P Coyle, G Davidson, R Butler.** Assessing the role of metallothionein in *Helicobacter pylori*-induced gastritis using a metallothionein-knockout mouse model. *Gastroenterol* 2002; 122 (4 suppl. 1): A428.
20. **EL Symonds, TI Omari, C Tran, RN Butler.** Loss of small intestinal sucrase activity in a mouse model of *Helicobacter pylori*. *Gastroenterol* 2002; 122 (4 suppl. 1): A456.
21. **R Butler, B Ritchie, CD Tran, D Brewster, B Zacharakis, G Davidson.** CH₄ production: Large differences in Aboriginal vs Caucasian infants. *Gastroenterol* 2002; 122 (4 suppl. 1): A545.
- 2001**
22. **H Huynh, RLT Couper, C Tran, A Muhamed, RN Butler.** N-acetyl-cysteine and *H. pylori* urease activity. *Gastroenterol*, Vol. 120 (4 suppl.):2994, 2001.
23. **CD Tran, RN Butler, H Huynh, F Campbell, P Coyle.** *Helicobacter pylori* infection in the mouse model reduces metallothionein expression. *Gastroenterol*, 2001: 120 (4 suppl.):3521.
24. **CD Tran, H Huynh, F Campbell, P Coyle, RN Butler.** Zinc induces a metal-binding protein in *Helicobacter pylori*. *Gastroenterol*, 2001; 120 (4 suppl.):3548.

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25. E Southcott, NS Pelton, **CD Tran**, GS Howarth, GP Davidson, R Butler. Probiotics promote region-specific recovery from methotrexate-induced small bowel damage in rats. *J Gastroenterol Hepatol*, 2001; 16 (Suppl.):A21.
26. **CD Tran**, H Huynh, F Campbell, P Coyle, R Butler. Metallothionein-knockout mouse: a potential model of *Helicobacter pylori* induced gastritis. *J Gastroenterol Hepatol*, 2001; 16 (Suppl.):A122.
27. **CD Tran**, H Huynh, F Campbell, P Coyle, R Butler. Zinc induces a metal-binding protein in *Helicobacter pylori*. *J Gastroenterol Hepatol*, 2001; 16 (Suppl.):A134.
- 2000**
28. **CD Tran**, RN Butler, H Huynh, F Campbell, P Coyle. *Helicobacter pylori* infection in the mouse model reduces metallothionein expression. *J Gastroenterol Hepatol* 2000;15 (Suppl.): J43.
29. H Huynh, RLT Couper, **CD Tran**, M Lim, A Lawrence, RN Butler. N-acetyl-cysteine – a novel treatment for *Helicobacter pylori* infection. *J Gastroenterol Hepatol* 2000;15 (Suppl.): J66.
30. Campbell F, Tran CD, Johnson B, Butler RN, Davidson GP. Hyperimmune bovine colostrum against *Helicobacter pylori* suppresses infection in mice. *J Pediatr Gastroenterol Nutr* 2000, 31: 5130.
- 1999**
31. **C Tran**, RN Butler, GS Howarth. Zinc in combination with a growth factor extract derived from bovine whey promotes recovery from methotrexate-induced small bowel damage in rats. *Gastroenterol*, 1999; 116 (4 suppl.):#2870.
32. **CD Tran**, RN Butler, GS Howarth. Zinc in combination with a growth factor extract derived from bovine whey promotes recovery from methotrexate-induced small bowel damage in rats. *J Gastroenterol Hepatol* 1999;14 (Suppl): A216.
- 1998**
33. **CD Tran**, GS Howarth, P Coyle, JC Philcox, AM Rofe, RN Butler. Zinc supplementation improves intestinal permeability in methotrexate-treated rats. *J Gastroenterol Hepatol*, 1998; 13 (Suppl.):A207.
- 1997**
34. **CD Tran**, GS Howarth, RN Butler, P Coyle, JC Philcox, AM Rofe. Metallothionein and zinc in methotrexate-induced damaged rats. *J Gastroenterol Hepatol* 1997;12 (Suppl): A87.
35. **CD Tran**, P Coyle, JC Philcox, AM Rofe, RN Butler, GS Howarth. Metallothionein: regulation of intestinal zinc. *J Gastroenterol Hepatol* 1997;12 (Suppl): A88.
- 1996**
36. **CD Tran**, RN Butler, GS Howarth, P Coyle, JC Philcox, AM Rofe. Gut metallothionein levels in the rat in response to normal and low dietary zinc and fasting. *J Gastroenterol Hepatol*, 1996; 11 (Suppl.):A95.
- 1995**
37. R Butler, **C Tran**, G Howarth, P Zalewski. Labile zinc in the rat small intestine after damage with methotrexate. *J Gastroenterol Hepatol*, 1995; 10 (Suppl. 2):A47.

National Conference Attendance and Presentations

- 2009** Australian Gastroenterology Week, October 2009, Sydney, NSW (1xoral and 1x poster presentation)
- 2007** Hepatology and Luminal Research Workshop – June 2007, Hunter Valley, NSW (invited speaker)
- 2006** Australian Gastroenterology Week, October 2006, Adelaide, SA (2xoral presentation; published abstract # 1 & 2)
- 2005** Australian Gastroenterology Week, October 2005, Brisbane, QLD (oral presentation; published abstract # 4)
Hepatology and Luminal Workshop, April 2005, Victor Harbour, SA
- 2002** Australian Gastroenterology Week; October 2002, Adelaide, SA (oral presentation)

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- 2001 **Asia Pacific Digestive Week** (incorporating Australian Gastroenterology Week); September 2001, Sydney, NSW (oral presentation)
- 2000 **Australian Gastroenterology Week**; October 2000, Hobart, TAS (oral presentation)
- 1999 **Australian Gastroenterology Week**; October 1999, Brisbane, QLD (poster presentation)
- 1998 **Australian Society of Medical Research** (SA Division); 1998 (oral presentation)
Australian Gastroenterology Week; October 1998, Canberra, ACT (oral presentation)
- 1997 **Australian Society of Medical Research**; 1997 (oral presentation)
Australian Society of Medical Research (SA Division); 1997
Australian Gastroenterology Week; October 1997, Brisbane, QLD (poster presentation)
- 1996 **Australian Society of Medical Research** (SA Division); 1996 (oral presentation)
Australian Gastroenterology Week; September 1996, Adelaide, SA (oral presentation)
- 1995 **Australian Physiological and Pharmacological Society**; November 1995, Leura, NSW (poster presentation)
Australian Society of Medical Research; 1995 (poster presentation)

International Conference Attendance and Presentations

- 2007 **Experimental Biology**, April 2007 Washington DC, USA (2 x poster presentation)
- 2006 **Experimental Biology**, April 2006 San Francisco, USA (poster presentation)
Falk Symposium 151 "Emerging Issues in Inflammatory Bowel Diseases", March 2006 Sydney, Australia (poster presentation)
- 2005 **BIO 2005 Annual International Convention**, June 2005 Philadelphia, Pennsylvania, USA
- 2004 **Experimental Biology**, April 2004, Washington DC, USA (oral presentation)
Digestive Disease Week, May 2004, New Orleans, Louisiana, USA
- 2002 **Digestive Disease Week**, May 2002, San Francisco, California, USA (2xposter presentations)
The 11th Symposium on Trace Elements in Man and Animals, 2002, Berkley, California, USA (invited speaker)
- 2001 **Digestive Disease Week**, May 2001, Atlanta, Georgia, USA (3xposter presentations)
- 2000 **Queen Elizabeth Hospital Symposium Meeting 2000**, Adelaide, SA, Australia (invited speaker)
- 1999 **Digestive Disease Week**, May 1999, Orlando, Florida, USA (poster presentation)
- 1998 **International Conference on Metal-binding Proteins in Biology**, October 1998, Alberta, Canada (poster presentation)

Awards and Prizes

- 2009 **May Fotheringham Fellowship (\$5,000)**
MS McLeod Post-Doctoral Fellowship (2009-2011)
- 2008 **MS McLeod Medal for Research Excellence – The Women's and Children's Hospital Foundation**
- 2007 **International Biographical Centre, Cambridge, England – Leading Scientist of the World 2007.**
International Biographical Centre, Cambridge, England – The Cambridge Blue Book – 2008.
International Biographical Centre, Cambridge, England – Top 100 Scientists - 2007.
International Biographical Centre, Cambridge, England – Outstanding Scientist Worldwide for 2007.
International Biographical Centre, Cambridge, England – Outstanding Scientist of the 21st Century, Inaugural Edition 2007.
- 2006 **The Marquis Who's Who Publication – Who's Who of Emerging Leaders, 1st Edition 2006**
The Marquis Who's Who Publication – Who's Who in Science and Engineering, 2006 Edition

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- 2005 Biotechnology 2005 Travel Scholarship (\$5,000)
- 2002 The Marquis Who's Who Publication – Who's Who in the World 20th Edition, 2002
Lederle Laboratories/Gastroenterological Society of Australia Junior Travel Award (\$5,000)
American Australian Association Sir Keith Murdoch Fellowship (2003)
- 2001 National Health and Medical Research Council Industry Fellowship (2003-7)
- 2001 The Marquis Who's Who Publication – Who's Who in the World 19th Edition, 2001
Postgraduate Travel Fellowship, University of Adelaide (\$1,500)
- 2000 2000 Young Citizen of the Year, Commendation Award
Semi-finalist of the Young Australian of the Year 2001 for Science and Technology
- 1999 Astra Pharmaceuticals/ Gastroenterological Society of Australia Travel Award (\$5,000)
Abroad Scholarship, University of Adelaide (\$1,500)
Finalist of the Young Australian of the Year 2000 for Science and Technology
- 1998 Abroad Scholarship, University of Adelaide (\$1,500)

Grant Funding

- 2010 Nutricia Research Foundation (CD Tran) – The role of zinc adjuvant therapy on linear growth in children with celiac disease; €25,000 (1 yr).
- MS McLeod Departmental Grant (CD Tran) – Zinc supplementation as an adjuvant therapy for children with Coeliac Disease; \$10,000 (1 yr).
- Women's & Children's Hospital Foundation (J Hawkes, RN Butler, CD Tran) – Intestinal maturation and absorptive capacity in breastfed vs formula fed infants; \$49,610 (1 yr).
- Channel 7 Children's Research Foundation of SA Inc. (CD Tran, RN Butler, GP Davidson) – Zinc supplementation as an adjuvant therapy for children with Coeliac Disease; \$50,000 (1 yr).
- 2009 MS McLeod Post-doctoral Fellowship (CD Tran) – Zinc supplementation as an adjuvant therapy for children with Coeliac Disease; \$75,000/yr (3 yrs).
- MS McLeod Departmental Grant – Fractional absorption of zinc and gut function in children with Coeliac Disease; \$10,000/yr (1 yr).
- 2008 Department of Health – Equipment grant; MJ Mini 48-well Personal Thermal Cycler PCR machine; \$6,250.
- 2007 Children, Youth and Women's Health Service Research Infrastructure Block Grant (CD Tran) – Equipment grant; Start D, 24 place microwave digestion system; \$33,362.
- Children, Youth and Women's Health Service Research Infrastructure Block Grant (CD Tran) – Early Career Researcher Award; \$20,000.
- 2006 Women's & Children's Hospital Foundation (CD Tran, RN Butler, NF Krebs, KM Hambidge, GP Davidson) – Zinc absorption and gut function in Indigenous children; \$46,300/yr (1 yr).
- Channel 7 Children's Research Foundation of SA Inc. (CD Tran, RN Butler, GP Davidson, N Krebs) – Fractional absorption of zinc and gut function in children with Coeliac Disease; \$30,000/yr (2 yrs).
- 2003 NHMRC Industry Fellowship (CD Tran) – The use of milk-derived and plant-derived bioactives in combination with zinc as therapy in the eradication of *Helicobacter pylori* infection and associated gastritis; \$80,000/yr (4 yrs).
- 2002 American Australian Association Sir Keith Murdoch Fellowship (CD Tran) – Assessment of zinc absorption using zinc stable isotope techniques; \$US25,000/yr (1 yr).

Patents

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Title of invention: Method for Inhibiting Bacterial Colonisation. Provisional patent (patent application # PCT/AU2004/001059)

Field of invention: Methods and compositions of inhibiting the bacterial colonisation of mucous epithelium of biological systems and the damage caused to the epithelium by such colonisation.

Inventors: Tran CD, Campbell MAF, Butler RN, Davidson GP, Couper R, Huynh HQ

Registered Owner: Children, Youth and Women's Health Service and Numico Research Australia Pty. Ltd.

Country: International

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